BIO-RAD Bio-Rad Laboratories

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DEC 1 9 2000

K003280

Special 510(k): Device Modification Summary
VARIANT™ II Total GHb

Submitter:

Bio-Rad Laboratories, Inc.
4000 Alfred Nobel Drive,
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Contact Person:

Jackie Buckley
Regulatory Affairs Rep. II

Date of Summary Preparation: October 18, 2000

Device Name: VARIANT™ II Total GHb

Classification Name: Class II, LCP

Predicate Device: VARIANT™ Total GHb
K941616

Statement of Intended Use: The VARIANT™ II Total GHb Program is intended for the separation and area percent determination of total glycated hemoglobin (GHb) in whole blood using boronate affinity high performance liquid chromatography (HPLC).

The VARIANT™ II Total GHb Program is intended for use only with the Bio-Rad VARIANT™ II Hemoglobin Testing System.

For in vitro diagnostic use.

Description of Device

The VARIANT™ II is a fully automated HPLC system which can be used to separate and Determine area percentages of glycated hemoglobin (GHb) from non-glycated hemoglobin.

The VARIANT™ II Total GHb Program utilizes the principles of boronate affinity high performance liquid chromatography (HPLC). The samples are automatically mixed and diluted on the VARIANT™ II Sampling Station (VSS) and injected into the analytical cartridge. This is a change from the VARIANT™ where samples had to be mixed and diluted manually before

being placed on the instrument. The VARIANT™ II chromatographic station (VCS) dual pumps deliver a programmed binary gradient of two elution buffers. The first elution buffers is optimized to bind GHb to the column, and the second elution buffer is optimized to displace the GHb from the column. Prepared sample hemolysates are automatically injected into the analytical flow path and applied to the affinity cartridge.

When sample hemolysate is passed through the column with the first buffer, the GHb is preferentially bound due to the formation of a stable complex between the coplanar cis-diol groups of GHb and the immobilized 3-aminophenylboronic acid in the affinity cartridge.

The non-GHb is eluted from the column with the first buffer, and the GHb is displaced using the second buffer. Column equilibrium is re-established by washing the column with buffer 1. The separated hemoglobin's pass through the flow cell of the filter photometer, where changes in the absorbance are measured at 415 nm. A secondary filter at 690 nm corrects for refractive effects caused by mixing buffers of different ionic strengths.

The VARIANT™ II Clinical Data Management (CDM) software performs reduction of raw data collected from each analysis. Calibration is used for the adjustment of the calculated GHb values and to compensate for minor differences in the separation efficiency of individual analytical cartridges. A patient sample report and a chromatogram are generated by CDM for each sample.

Testing To Establish Substantial Equivalence

To establish substantial equivalence to an existing device, and thus establish the safety and effectiveness, the VARIANT™ II Total GHb is compared to the VARIANT™ Total GHb. A review of the intended use of each system shows them to be the same. The only product differences include label/packaging modifications for Wash/Diluent reagent and calibrator. Other differences such as the CD-ROM program reflects upgrades of VARIANT™ II. No changes were made in fundamental scientific technology.

Performance Characteristics

Performance Tests	VARIANT™	VARIANT™ II
Linearity	99.6%	100.1%
Correlation	Slope	0.990
Correlation	Intercept	-0.079
Correlation	r^2	0.998
Normal Range	%GHb mean = 5.6	%GHb mean =5.4
Interferences: Lipemia No interference up to indicated level.	3000 mg/dL	5000 mg/dL
Interferences: Icterus No interference up to the indicated level.	10.0 mg/dL	10.0 mg/dL
Interferences: EDTA No interference up to the indicated level.	100 mg/mL	100 mg/mL
Within Run Precision	Low sample Mean = 2.4 % SD = 0.1 %CV = 2.3 % GHb	Low sample Mean = 5.8% SD = 0.085 %CV =1.48 % GHb
Within Run Precision	Medium sample Mean = 13.4 % SD = 0.2 %CV = 1.1 % GHb	Medium samples Mean = 10.2 % SD = 0.11 %CV = 1.03 % GHb
Within Run Precision	High sample Mean = 24.6 % SD = 0.3 %CV = 1.1 % GHb	High sample Mean = 14.5% SD = 0.18 %CV = 1.25 % GHb
Between Run Precision	Low sample Mean = 2.4 % SD = 0.3 %CV =11.9 % GHb	Low sample Mean = 5.8% SD = 0.14% CV = 2.34 % GHb
Between Run Precision	Medium sample Mean = 13.1 % SD = 0.2 %CV = 1.5 % GHb	Medium sample Mean = 10.2% SD = 0.20 %CV = 1.97 % GHb
Between Run Precision	High sample Mean = 24.1 % SD = 0.7 %CV = 2.8 % GHb	High sample Mean = 14.5% SD = 0.23 %CV = 1.56 % GHb

When considering the similarities of the intended use, general characteristics of the two devices, the use of the same technology and the excellent concordance between the two methods, it can be concluded that the VARIANT™ Total GHb and the VARIANT™ II Total GHb are substantially

equivalent. Based on the establishment of substantial equivalence, the safety and effectiveness of the VARIANT™ II Total GHb is confirmed.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

DEC 1 9 2000

Ms. Jackie Buckley
Regulatory Affairs Representative
Bio-Rad Laboratories
Diagnostics Group
4000 Alfred Nobel Drive
Hercules, California 94547-1803

Re: K003280
Trade Name: VARIANT™ II Total GHb
Regulatory Class: II
Product Code: LCP
Dated: October 18, 2000
Received: October 19, 2000

Dear Ms. Buckley:

We have reviewed your Section 510(k) notification of intent to market the device referenced above and we have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (Premarket Approval), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 895. A substantially equivalent determination assumes compliance with the Current Good Manufacturing Practice requirements, as set forth in the Quality System Regulation (QS) for Medical Devices: General regulation (21 CFR Part 820) and that, through periodic QS inspections, the Food and Drug Administration (FDA) will verify such assumptions. Failure to comply with the GMP regulation may result in regulatory action. In addition, FDA may publish further announcements concerning your device in the Federal Register. Please note: this response to your premarket notification submission does not affect any obligation you might have under sections 531 through 542 of the Act for devices under the Electronic Product Radiation Control provisions, or other Federal laws or regulations.

This letter will allow you to begin marketing your device as described in your 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801 and additionally 809.10 for in vitro diagnostic devices), please contact the Office of Compliance at (301) 594-4588. Additionally, for questions on the promotion and advertising of your device, please contact the Office of Compliance at (301) 594-4639. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its internet address "http://www.fda.gov/cdrh/dsma/dsmamain.html".

Sincerely yours,

Steven Gutman

Steven I. Gutman, M.D., M.B.A.
Director
Division of Clinical Laboratory Devices
Office of Device Evaluation
Center for Devices and Radiological Health

Enclosure

Statement of Indications for Use

510(k) Number: K003280

Device Name: VARIANT™ II Total GHb

Indications for Use:

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(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED

Concurrence of CDRH, Office of Device Evaluation (ODE) Peter E Mackin

(Division Sign-Off)
Division of Clinical Laboratory Devices K003280
510(k) Number

Prescriptive Use ✓ OR Over-The-counter Use _____
(Per 21 CFR 801.109)